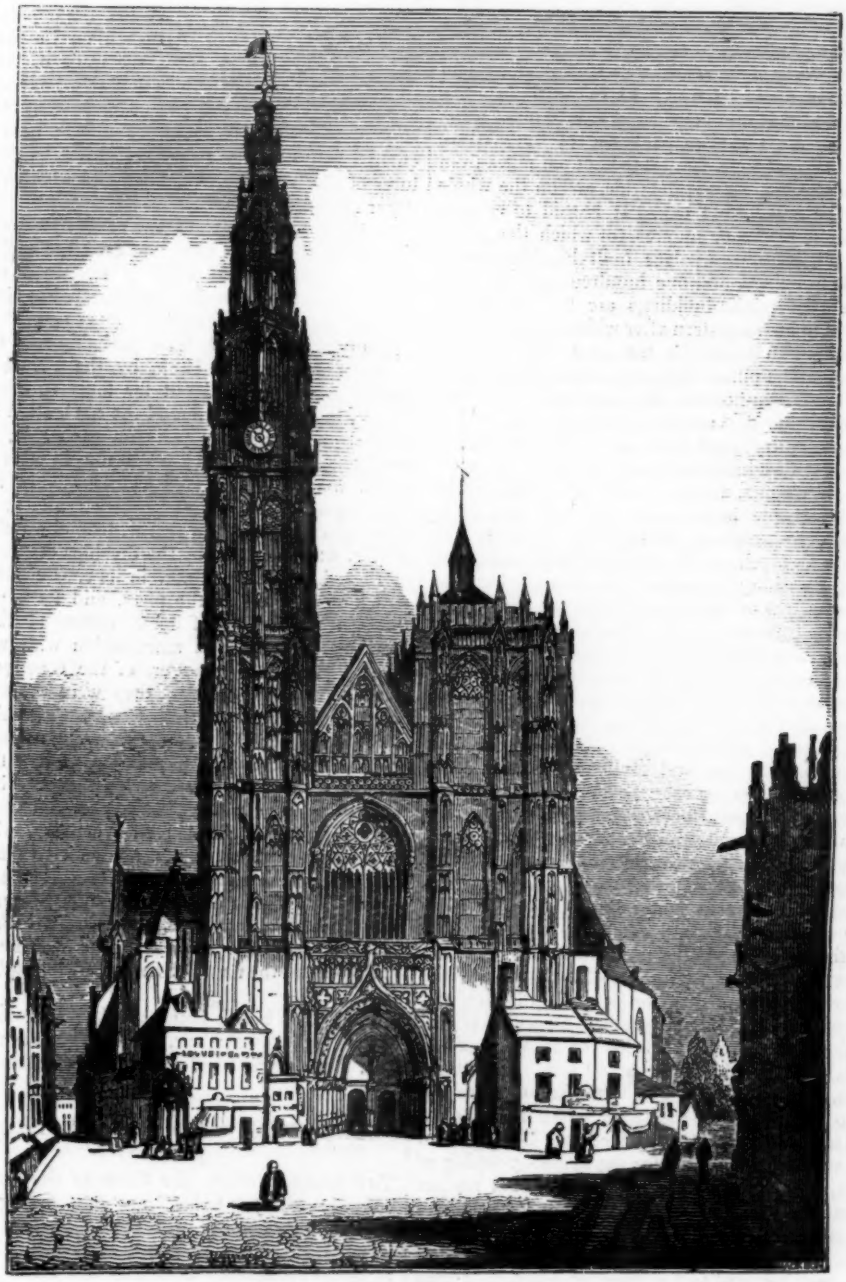
THE PENNY MAGAZINE

OF THE

Society for the Diffusion of Useful Knowledge.

46.] PUBLISHED EVERY SATURDAY [DECEMBER 22, 1832.

ANTWERP.



[West front of Antwerp Cathedral.]

THE city of Antwerp stands on the east or right bank of the Schelde, in north lat. 51° 14′, and about twenty-five miles in a straight line nearly due north of Brussels, the present capital of Belgium. The Flemish name for this place is *Antwerpen;* the Spaniards, who once possessed it, call it *Amberes*, and the French, *Anvers*. Few places are more favourably situated for foreign commerce than Antwerp. The river opposite the town is from 1500 to 2000 feet wide, and admits the largest ships to come up to Antwerp, and to enter the docks and canals. From Antwerp to the mouth of the river is about fifteen miles, and this space is lined with forts. In the Dutch boundary map between Holland and Belgium of the date 1831, (the latest which we have seen,) there are no fewer than six forts marked on the east bank of the Schelde below Antwerp, and as many on the west bank. At its

mouth the Schelde divides into two large arms, which encircle the islands of North and South Beveland, with the island of Walcheren, in which are the strong towns of Middleburg, and Vlissingen, called by the English, Flushing. The more northerly arm is called the East Schelde; the other is named Hond or West Schelde, through which vessels approach to Antwerp.

Antwerp is strongly fortified on the land side like most of the old Belgian towns, and has also on the south a remarkably strong citadel, in the form of a pentagon, which was erected by the Duke of Alva in 1568. During the occupation of Antwerp by the French, in the reign of Napoleon, the works of the citadel were strengthened, and several additions made by which its outward form has been altered; and it is now considered able to make a formidable resistance. The principal houses of Antwerp are built of a kind of sandstone, brought about ten miles from the town; the streets are generally wide, and on the whole it may be called a well-built city. It is said to contain twenty-six public places, or squares, (of which the Meer, the finest of all, contains a palace built by Napoleon,) seventy public buildings, and one hundred and sixty-two streets. The chief public buildings are the Bourse or Exchange, said to be the pattern after which those of London and Amsterdam were built, though it is superior to either of them. The pillars that support its galleries are of marble. The Town-house is also reckoned a fine structure. But the glory of Antwerp is its Cathedral, which, in spite of some paltry shops that stick to its walls, strikes every stranger with admiration when he views the noble elevation of its steeple, and the costly decorations of its interior. The steeple is of stone, and 400 feet high, according to those accounts which make it least; but others make it as much as 450 feet, which is more than the height of Strasburg Cathedral. It generally happens that the dimensions of all large edifices are very incorrectly given by travellers, and, indeed, in all books of ordinary reference; and we can therefore affirm nothing positive as to the height of the Antwerp spire. When the spectator has ascended to the highest point that is accessible, he sees all the city spread out like a map before him, while by the aid of a small glass his eye travels over the flat plains of Belgium and Holland for forty miles in every direction. To the south, over a thickly wooded country, the eye can reach to Mechlin, and still further beyond it to Louvain and Brussels. Towards the north and north-west Fort Lillo on the Schelde, and far beyond it, to the north-west, the shipping of Flushing and the spire of Middleburg, in the centre of the island of Walcheren, are distinctly visible. The latter object is near forty miles from Antwerp in a straight line. To the north and north-east stretches the dreary flat through which the traveller must find his way to Bergen op Zoom, and Breda. The length of this magnificent structure is said to be 500 feet, (we do not vouch for the accuracy of the dimensions,) and the width 230 or 240 feet. It contains 125 pillars. Rubens, who was a native of Antwerp, painted two pictures for the high altar, which are reckoned among his master-pieces. One of these, the Descent from the Cross, which is admirable for the skilful grouping of the figures, is probably familiar to many of our readers from engravings and plaster casts. These pictures had a journey to Paris at the time when so many works of art were summoned to adorn the French capital, but they have since been restored to the place for which they were originally intended. Among the great improvements which Buonaparte began at Antwerp, are the new quay and basin, which, though grand works, are said by some travellers to lose much of their importance when compared with the docks of Liverpool, or the great docks of London. Antwerp, like many continental cities, excels our English towns in the decorations of trees. Along the whole line of the new quay a row of elms is planted, which some travellers who visited Antwerp in 1817, inform us, had been done with such success that 'out of several hundreds lately planted, only two or three had failed to grow." The largest trees about the town had been felled in 1814, when Carnot was preparing to make an obstinate defence in favour of his Imperial Master.

Antwerp, besides its connection with the sea, has a ready water communication, either by the Schelde or canals, with Mechlin, Louvain, and Brussels on the south and east, and with Ghent and Bruges on the west. In 1831 its population was 77,199, according to the Dutch map above referred to, which has the population of the chief towns included in it marked on its face. Before the late revolution in 1830, the trade of Antwerp was considerable; though it must doubtless have suffered very much since that period, in consequence of the unsettled state of the Belgic question. In 1829, near 1000 ships entered its ports. Antwerp has also extensive manufactures of black sewing silk, linen and woollen cloth, silk, sugar refining, &c.

Antwerp has been the scene of many remarkable political events, and has often suffered the evils attendant on war. As late as 1830 it sustained considerable damage from the cannonading directed against it by the Dutch troops in the citadel.

Many of our readers have probably read of the great siege of Antwerp in 1585, by the Prince of Parma, against whom it held out for fourteen months. The Prince, in order to command the navigation of the river, built strong projecting piers on each side, which were mounted with cannon; while the intermediate space, which was thus rendered comparatively narrow, was filled up with boats chained together, and firmly moored. This enormous work, which withstood all the floods of winter, was destroyed by the fireships of Antwerp. One of these horrible machines, in its course down the river, struck against one of the piers, and its explosion burst through the bridge of boats, destroyed the pier, and blew up the men and ammunition with which it was loaded. In spite, however, of the courage and obstinacy of the Antwerpers, they were at last compelled to surrender to the Spanish troops. The history of this once flourishing city exhibits rather a melancholy retrospect. Reduced to a population of less than 80,000, with its trade diminished, and an enemy in its citadel, we cannot help looking back to its flourishing days of the early part of the sixteenth century, when 200,000 inhabitants and strangers are said to have filled its streets, and the commerce of the world was in its harbour. The names of such illustrious painters as Rubens, Van Dyke, and Jordaens, have shed a lustre on it as a school of painting; and among its illustrious citizens we may mention the name of the early geographer, Abraham Ortelius.

Some facts in this notice are derived from the 'Journal of an Horticultural Tour, &c. in Flanders and Holland,' &c.; Edinburgh, 1823: a useful and amusing book.

STRUCTURE AND USE OF THE HUMAN LUNGS.

THE human lungs, like those of the inferior animals vulgarly called "lights," are soft, spungy substances, which, when healthy, will float in water. Their use is to assist in the purification of the blood. In many creatures the respiratory apparatus has an appearance very dissimilar to that of the human lungs. In fishes, the duty of pulmonary organs is performed by their *gills;* and in insects, no air being admitted by the mouth, their blood is ventilated through the medium of small holes arranged along their sides.

Whatever the structure may be through which the atmospheric air is admitted to act upon the blood, its function is equally essential to life; for though an insect may live much longer excluded from the air than a

human being can possibly do, yet it will, after a time, certainly perish on account of the deprivation.

When "holding our breath," we soon come to experience a feeling of suffocation. This is merely a nervous impression, produced by the blood passing impure through the lungs to the left side of the heart; and it indicates the necessity of respiring fresh air to purify that fluid. To suffocate an insect, we have only to smear it with thick oil. The oil fills the breathing pores in its sides, and this obstruction of the medium of respiration, if continued, will eventually kill the creature. Common water always contains a portion of atmospheric air; and fishes will be smothered if confined to water which has been deprived of its air, under the receiver of an air-pump.

The sensible change which the blood undergoes in passing through our lungs is observed in its *colour*, characterized as *venous* blood. It enters the lungs of a blackish or deep-purple colour; but in leaving them it is of a bright vermilion red, and it is then called *arterial* blood. This change is owing to the action of the inhaled air.

It may be asked—"How can the fluid which is contained in vessels be at all affected by the respired air which is external to these vessels?" The lungs, with the exception of the air-tubes, (branches of the windpipe that perforate them in every direction,) are one mass or net-work of blood-vessels. These, when approaching to the surface of the lungs, divide into an infinitude of small branches, the coats of which are so extremely thin that the air we breathe readily acts through them, and makes the requisite changes.

The circulation of the blood, from the time that it leaves the lungs until it returns again, is very simple. The first stage of its progress is occupied in passing from the lungs to the left cavity of the heart. The left cavity of the heart then contracts and forces it along the *arteries*, (the vessels that pulsate,) and by them it is conveyed to every part of the body to bestow nourishment upon the different parts. All the demands of the system, in the way of nutrition, being supplied, the blood returns through the *veins* to the right cavity of the heart and from thence to the lungs to be purified. When purified in the lungs, it pursues the same route anew.

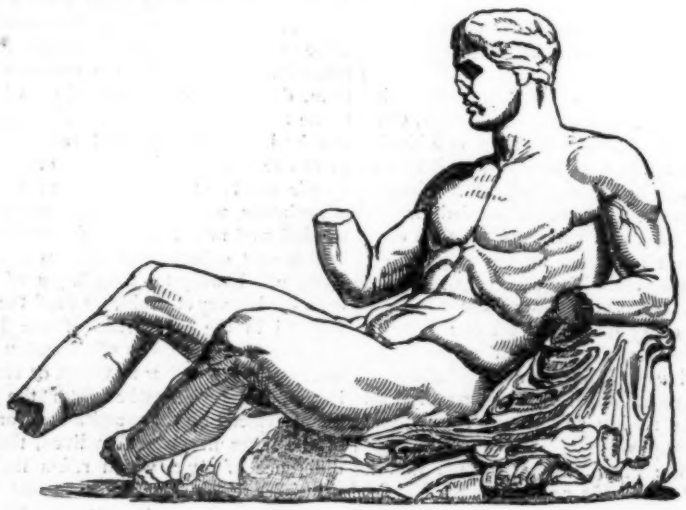
By the preceding description it will be seen that the colour of the blood becomes changed, during its passage through the lungs, from a deep purple to a bright red. In the arteries it is always of the vermilion colour; and in the veins it is as uniformly blackish or deep purple. Persons unacquainted with the latter fact, while submitting to the operation of letting blood at the arm, have been frequently heard to exclaim "it is frightfully black." Such persons are not aware that the dark hue of venous blood is its natural appearance. This popular mistake is fostered by quacks to persuade the uninitiated that they are very unwell, when in reality there may be little or nothing the matter with them.

One vessel excepted, professional men never let blood from an artery; for, if once cut, an artery of any considerable size is not likely to stop bleeding unless it be tied at the incised point with a thread. The exception to this rule is a small artery, which may be felt, and, in many persons *seen*, pulsating on the temple. This vessel is sometimes opened in apoplexy and other dangerous cases of head disease.

THE ELGIN MARBLES.

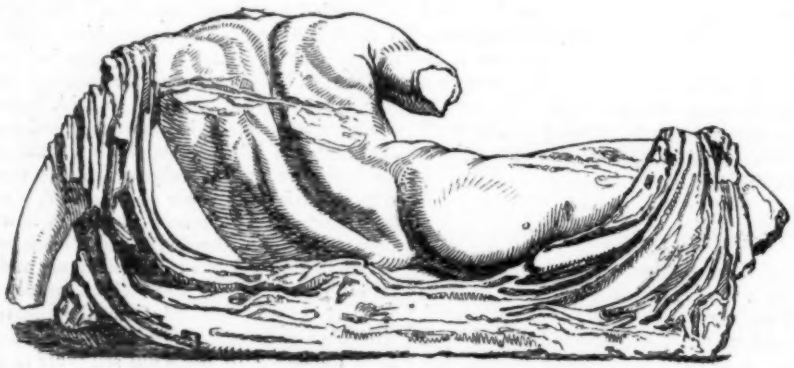
No small degree of discussion was excited, on the first arrival of the Elgin marbles in England, as to their actual merit. This may appear extraordinary, considering the high and unquestionable excellence of these works. But it is to be recollected, that sculpture does not address itself, like painting, to our plain and obvious perceptions, but depends for its due comprehension on a long course of peculiar and specific studies. We cannot, therefore, blame those persons who could not at once perceive, or might not choose to make an implicit surrender of their judgments until they *had* perceived, the beautiful and sublime qualities of the Elgin marbles. The opinions given by the persons who were considered best qualified to judge, before the Committee of the House of Commons, were pretty unanimous; and the point of perfection which they agreed in ascribing to these works, was the union of nature and ideality. This is the highest quality of art, whether in sculpture or painting, the common defect among the practitioners of both arts being an undue inclination to either one of those qualities, to the neglect of the other. An exclusive attention to *nature*, in the common acceptation of the term, degenerates into vulgarity; while the attempt to refine the representation of the human form by an ideal standard, without perpetual reference to living models, gives rise to *conventional style* or *manner*—the grave of excellence. It is to Rome that we must refer for the history of sculpture, where the whole progress of the art, from its birth and maturity to its decline and fall, is developed in that vast collection of statues which embellishes the Vatican. During the long lapse of ages which ensued from the infancy of sculpture until the arts became extinguished in the subversion of the Roman empire, we perceive vast disparities of execution in the innumerable works extant, whether by Greek or Italian artists. These inequalities result rather from the various degrees of talent evinced by the practitioners, or from the influence of the times in which they lived, than from any actual difference of *style*, which refers itself uniformly to the principles established by the great masters of Greece, and is denominated the *style of the antique*. The art of sculpture was consummated in this style, which discarded individual peculiarities, and gave a high generic character to the human form. Thus was elicited that idea of abstract beauty which is embodied in the antique statues, and which the experience of all succeeding artists has taught them to be unapproachable through any other medium. But it is the fate of all excellence to suffer from unskilful imitation, and the calm and elevated beauty of the antique, when transmitted by the chisel of inferior practitioners, assumes the aspect of frigid and wooden inanity. On the revival of the arts in Italy, a new epoch in the annals of sculpture commenced with the appearance of Michael Angelo. That artist renounced the imitation of the antique and struck out a style which had no prototype except in his own imagination. It is said that he expressed regret at not having devoted his whole life to sculpture; a sentiment in which, no one, we think, will coincide, who has compared his statues with his paintings in the Sistine chapel. The sweeping convexity and angular decision of his manner is admirably adapted to pictures seen at such immense height and distance, but becomes harsh and overcharged in sculpture, which is intended for closer inspection. But Michael Angelo, if he fails to excite our sympathies, always extorts our reverence: he is not to be approached with levity; we feel that in his presence we are standing before a giant, who, if he does not conciliate us with beauty, commands our implicit homage by his energy and grandeur. The aberrations of Michael Angelo from what may be termed the legitimate style of sculpture, may be considered, however, to have been chaste and classical, if compared with the eccentricities of Bernini, that most fantastical of professors, by whom the severe and solemn muse was compelled to descend from her pedestal, and perform the evolutions of a rope-dancer. The novelty introduced by Michael Angelo resulted from the innate and uncontrollable vigour of his faculties: that of Bernini arose from the desire to dress out sculpture in the attractions of picturesque effect; a vain and unphilosophical attempt, which has communicated to all his works a character of

absurdity and extravagance, the natural consequence of attempting to regulate the practice of one art by the principles of another. Bernini, however, had considerable talent; it is only to be regretted that it was not better directed. The schools of sculpture continued afterwards to fluctuate under different impulses, nor can it be said that the principles of true taste began to revive until the genius of Canova dawned on Italy. The style of Greek sculpture may be said to have been resuscitated by his example. We have heard it asserted that his style is frequently meretricious, and without stopping to discuss whether this accusation may or may not be justly charged on some of his inferior performances, we allege, without fear of contradiction, that his groups of Hercules and Lichas, and of Theseus and the Centaur, may challenge equality with any compositions of equal magnitude in ancient art. At the time when Canova visited England, the Elgin marbles had just been imported hither, by the taste, patriotism, and enterprise of the Earl of Elgin, and it is almost superfluous to add that they excited the highest admiration in the Italian artist.



[The Theseus.]

The two principal statues among the Elgin marbles are those of Theseus, the Athenian hero, and a recumbent figure, supposed to be the river-god Ilissus (numbered in the Synopsis 93 and 99). They are executed in a style of extraordinary breadth and grandeur. Theseus is represented half reclined on a rock, covered with the skin of a lion, and appears to be resting after some mighty labour. The figure of the Ilissus is less robust: all his contours flow in lines of undulating elegance. But in both these statues, that which chiefly strikes us, in spite of the dilapidations which they have suffered, is the vitality which seems to pervade them. In these, not only the office and appearance of the muscles, whether in action or at rest, but the bearings of the skeleton, are expressed with an accuracy which could only have resulted from the most profound science, added to an acute and perpetual observation of nature. The statue of the Ilissus is especially remarkable for its graceful flexibility, and we would observe, without going too technically into the subject, how different is the indentation formed by the lower line of the ribs in this figure, so admirably expressing its position, from that geometrical arch by which this part of the body is designated in the ordinary antique statues, and which is so rarely accommodated to the action represented. The principle pointed out in this instance may be traced throughout the Elgin marbles in which true art is never superseded by conventional style. We believe that in the opinion of the majority of connoisseurs, the statue of Theseus is considered superior to that of the Ilissus. Canova, however, preferred the latter; and Raffaelle, who imported designs from Greece, has adapted this figure to that of the fallen Commander, in his picture of Heliodorus. It is well known that the Ilissus was a small stream which ran along the south side of the plain of Athens. The statue in which it is here personified occupied the left angle of the west pediment of the Parthenon, and that of the Theseus was placed opposite to it on the east pediment, next to the horses of Hyperion.



[The Ilissus.]

THE GREAT EARTHQUAKE AT LISBON IN 1755.

(Continued from No. 45.)

[The Ruins of St. Paul's. From a print by Le Bas, published in 1757, after a drawing made on the spot.]

In the midst of our devotions the second great shock came on, little less violent than the first, and completed the ruin of those buildings which had been already much shattered. The consternation now became so universal, that the shrieks and cries of *Miserecordia* could be distinctly heard from the top of St. Catherine's Hill, at a considerable distance off, whither a vast number of people had likewise retreated; at the same time we could hear the fall of the parish church there, whereby many persons were killed on the spot, and others mortally wounded. You may judge of the force of this shock, when I inform you it was so violent that I could scarce keep on my knees, but it was attended with some circumstances still more dreadful than the former. On a sudden I heard a general outcry, "The sea is coming in, we shall be all lost." Upon this, turning my eyes towards the river, which in that place is near four miles broad, I could perceive it heaving and swelling in a most unaccountable manner, as no wind was stirring. In an instant there appeared, at some small distance, a large body of water, rising as it were like a mountain. It came on foaming and roaring, and rushed towards the shore with such impetuosity, that we all immediately ran for our lives as fast as possible; many were actually swept away, and the rest above their waist in water at a good distance from the banks. For my own part, I had the narrowest escape, and should certainly have been lost, had I not grasped a large beam that lay on the ground, till the water returned to its channel, which it did almost at the same instant, with equal rapidity. As there now appeared at least as much danger from the sea as the land, and I scarce knew whither to retire for shelter, I took a sudden resolution of returning back, with my clothes all dropping, to the area of St. Paul's. Here I stood some time, and observed the ships tumbling and tossing about as in a violent storm; some had broken their cables and were carried to the other side of the Tagus; others were whirled round with incredible swiftness; several large boats were turned keel upwards; and all this without any wind, which seemed the more astonishing. It was at the time of which I am now speaking, that the fine new quay, built entirely of rough marble, at an immense expense, was entirely swallowed up, with all the people on it, who had fled thither for safety, and had reason to think themselves out of danger in such a place: at the same time a great number of boats and small vessels, anchored near it, (all likewise full of people, who had retired thither for the same purpose,) were all swallowed up, as in a whirlpool, and never more appeared.

This last dreadful incident I did not see with my own eyes, as it passed three or four stones' throws from the spot where I then was, but I had the account as here given from several masters of ships, who were anchored within two or three hundred yards of the quay, and saw the whole catastrophe. One of them in particular informed me, that when the second shock came on, he could perceive the *whole* city waving backwards and forwards, like the sea when the wind first begins to rise; that the agitation of the earth was so great even under the river, that it threw up his large anchor from the mooring, which swam, as he termed it, on the surface of the water; that immediately upon this extraordinary concussion, the river rose at once near twenty feet, and in a moment subsided; at which instant he saw the quay, with the whole concourse of people upon it, sink down, and at the same time every one of the boats and vessels that were near it were drawn into the cavity, which he supposes instantly closed upon them, inasmuch as not the least sign of a wreck was ever seen afterwards. This account you may give full credit to, for as to the loss of the vessels, it is confirmed by everybody; and with regard to the quay, I went myself a few days after, to convince myself of the truth, and could not find even the ruins of a place, where I had taken so many agreeable walks, as this was the common rendezvous of the

factory in the cool of the evening. I found it all deep water, and in some parts scarcely to be fathomed.

This is the only place I could learn which was swallowed up in or about Lisbon, though I saw many large cracks and fissures in different parts; and one odd phenomenon I must not omit, which was communicated to me by a friend who has a house and wine-cellars on the other side the river, viz., that the dwelling-house being first terribly shaken, which made all the family run out, there presently fell down a vast high rock near it; that upon this the river rose and subsided in the manner already mentioned, and immediately a great number of small fissures appeared in several contiguous pieces of ground, from whence there spouted out, like a *jet d'eau*, a large quantity of fine white sand to a prodigious height. It is not to be doubted the bowels of the earth must have been excessively agitated to cause these surprising effects, but whether the shocks were owing to any sudden explosion of various minerals mixing together, or to air pent up, and struggling for vent, or to a collection of subterraneous waters forcing a passage, God only knows. As to the fiery eruptions then talked of, I believe they are without foundation, though it is certain, I heard several complaining of strong sulphureous smells, a dizziness in their heads, a sickness in their stomachs, and difficulty of respiration, not that I felt any such symptoms myself.

I had not been long in the area of St. Paul's, when I felt the third shock, which though somewhat less violent than the two former, the sea rushed in again, and retired with the same rapidity, and I remained up to my knees in water, though I had gotten upon a small eminence at some distance from the river, with the ruins of several intervening houses to break its force. At this time I took notice the waters retired so impetuously, that some vessels were left quite dry, which rode in seven fathom water: the river thus continued alternately rushing on and retiring several times together, in such sort, that it was justly dreaded Lisbon would now meet the same fate which a few years ago had befallen the city of Lima *; and no doubt had this place lain open to the sea, and the force of the waves not been somewhat broken by the winding of the bay, the lower parts of it at least would have been totally destroyed.

The master of a vessel, which arrived here just after the 1st of November, assured me, that he felt the shock above forty leagues at sea so sensibly, that he really concluded he had struck upon a rock, till he threw out the lead, and could find no bottom, nor could he possibly guess at the cause, till the melancholy sight of this desolate city left him no room to doubt of it. The two first shocks in fine were so violent, that several pilots were of opinion, the situation of the bar, at the mouth of the Tagus, was changed. Certain it is, that one vessel, attempting to pass through the usual channel, foundered, and another struck on the sands, and was at first given over for lost, but at length got through. There was another great shock after this, which pretty much affected the river, but I think not so violently as the preceding, though several persons assured me, that as they were riding on horseback in the great road leading to Belem, one side of which lies open to the river, the waves rushed in with so much rapidity that they were obliged to gallop as fast as possible to the upper grounds, for fear of being carried away.

I was now in such a situation that I knew not which way to turn myself; if I remained there, I was in danger from the sea; if I retired further from the shore, the houses threatened certain destruction, and, at last, I resolved to go to the Mint, which being a low and very strong building, had received no considerable damage, except in some of the apartments towards the river. The party of soldiers, which is every day set there on guard, had all deserted the place, and the only person that remained was the commanding officer, a nobleman's son, of about seventeen or eighteen years of age, whom I found standing at the gate. As there was still a continued tremour of the earth, and the place where we now stood (being within twenty or thirty feet of the opposite houses, which were all tottering) appeared too dangerous, the court-yard likewise being full of water, we both retired inward to a hillock of stones and rubbish: here I entered into conversation with him, and having expressed my admiration that one so young should have the courage to keep his post, when every one of his soldiers had deserted theirs, the answer he made was, though he were sure the earth would open and swallow him up, he scorned to think of flying from his post. In short, it was owing to the magnanimity of this young man that the Mint, which at this time had upwards of two millions of money in it, was not robbed; and indeed I do him no more than justice, in saying, that I never saw any one behave with equal serenity and composure, on occasions much less dreadful than the present. I believe I might remain in conversation with him near five hours; and though I was now grown faint from the constant fatigue I had undergone, and having not yet broken my fast, yet this had not so much effect upon me as the anxiety I was under for a particular friend, with whom I was to have dined that day, and who lodging at the top of a very high house in the heart of the city, and being a stranger to the language, could not but be in the utmost danger: my concern, therefore, for his preservation, made me determine, at all events, to go and see what was become of him, upon which I took my leave of the officer.

[To be concluded in No. 47.]

* This happened in 1746.

STATISTICAL NOTES.

THE SILK TRADE.

(33.) THE silk manufacture was introduced into England in the fifteenth century. In the reign of Charles II. it appears by the preamble of a statute passed in 1666 to have given employment to 40,000 persons; and after the revocation of the Edict of Nantes in 1685, about 50,000 refugees fled to England, a large proportion of whom settled in Spitalfields, in the silk manufacture, and introduced several new branches of art. It should be remarked that at this period foreign silks were freely admitted; and from £600,000 to £700,000 worth were annually imported from 1685 to 1692, being the period when the British manufacture was making the most rapid advances. But the refugees in 1692 obtained an exclusive patent for certain articles; and, in 1697, Parliament, at their solicitation, prohibited the importation of French and other European silk goods. This prohibition was, in 1701, extended to the silk goods of India and China. These facts should particularly be borne in mind, because they show the utter fallacy of the opinion, that we owe the silk manufacture to the prohibiting system, the truth being that it had taken firm root, and become of great importance long before it was subjected to the trammels of monopoly.

(34.) From the beginning of the eighteenth century down to 1824, the history of the silk manufacture is a series of complaints, on the part of the manufacturers, of the importation of foreign silks; of impotent efforts on the part of Parliament to exclude them; and of combinations and outrages on the part of the workmen. In 1773, the workmen obtained what is called the Spitalfields Act, entitling the Middlesex weavers to demand fixed wages, to be settled by the magistrates. This act having gradually driven the most valuable branches of the manufacture from Spitalfields, and done otherwise incalculable mischief to the trade, was repealed in 1824. Whilst the prohibitory system was in force, the manufacture was exposed

to considerable vicissitudes, the obvious reason of which was, that the monopoly enjoyed by the manufacturers, and the Spitalfields Act, put a stop to all improvement, so that the manufacture remained stationary in England, while, on the Continent, it was rapidly advancing. The spirit of invention, which worked such astonishing results in the cotton manufacture, seems to have been wholly unknown in that of silk.

(35.) The impolicy of the restrictive system having become obvious by the experience of 130 years, and the manufacturers of London having petitioned against the existing laws, Mr. Huskisson introduced a new policy in 1826, and in that year foreign silks were first admitted for importation, on payment of a duty of 30 per cent. ad valorem. The duties on the raw material had been previously reduced, together with the duties on dye-stuffs; and the manufacturers, when the foreign manufactures were first admitted, were enabled to obtain foreign thrown silk at a duty of 5*s.* instead of 14*s.* 7½*d.* per pound, and raw silk at 3*d.* per pound instead of 5*s.* 7½*d.* During the last five years, it is no exaggeration to affirm that the silk manufacture has made a more rapid progress than it did during the whole of the preceding century. Most of the machines and processes known on the Continent have been introduced amongst us, and many of them have been materially improved. The plain silk goods manufactured in England are now superior to those of France; and although the ribands, figured gauzes, and light fancy goods of France excel ours, yet even in these departments we have made very great advances, and if more attention were paid in this country to the arts of designing and colouring, we might not despair of rivalling the fabrics of Lyons in brightness and lustre. The imports of raw and thrown silk amounted last year to 4,693,517 lbs., being nearly twice the quantity (2,432,286 lbs.) imported in 1823, which was the greatest importation that took place in any one year previously to the repeal of the prohibitory system. The official value of our silk goods exported in 1823 was £140,320, whereas in 1830 it amounted to £437,880, being an advance of more than three hundred per cent., and we are rapidly underselling the French in all foreign markets.

(36.) We recommend those who desire further details to refer to the official accounts collected in the article on silk in M'Culloch's Commercial Dictionary, and the parliamentary speeches of Mr. Huskisson and Mr. Poulett Thomson may likewise be consulted with advantage. A committee on the silk trade sat during the last session, but has not yet made its report. Whether it be in the power of the legislature to remedy the evils arising from the uncertainty and fluctuation of the demand for a particular kind of labour, may, perhaps, be doubtful; and it is to be feared that distress does exist in several branches of the silk trade, to a lamentable extent. Silk goods, which can hardly ever become an article of general consumption, will always be peculiarly dependent upon the fickleness of fashion; and the fancy of a few ladies of rank may, in this respect, affect the well-being of thousands of operatives. But it should be remembered that the silk trade is yet, in point of fact, only partially free; and that the principle of competition can hardly be said to have had its full operation, whilst importation is still restricted in very many ways, and the home-manufacturer is still protected by a duty of thirty per cent. It is sincerely to be hoped that the government may at least never depart from those principles, which were thus forcibly expressed by Mr. Poulett Thomson in his speech on the silk trade in April, 1829. "The very essence of commercial and manufacturing industry is freedom from legislative interference, and legislative protection. Attempt to assist its course by legislative enactments, by fostering care—you arrest its progress, you destroy its vigour. Unbind the shackles in which your unwise tenderness has confined it—permit it to take unrestrained its own course—expose it to the wholesome breezes of competition—you give it new life, you restore its former vigour. Industry has been well likened to the hardy Alpine plant; self-sown on the mountain-side, exposed to the inclemency of the season, it gathers strength in its struggles for existence—it shoots forth in vigour and in beauty. Transplanted to the rich soil of the parterre, tended by the fostering hand of the gardener, nursed in the artificial atmosphere of the forcing glass, it grows sickly and enervated, its shoots are vigourless, its flowers inodorous. In one single word lies the soul of industry—competition. The answer of the statesman and economist to his Sovereign inquiring what he would do to assist the industry of his country, was, *Let it take its own way.* Such is my prayer. Relieve us from the chains in which your indiscreet tenderness has shackled us; remove your oppressive protection; give us the fair field we ask, and we demand no more. The talent, the genius, the enterprise, the capital, the industry of this great people will do the rest."

THE WEEK.

DECEMBER 25.—The anniversary of the birth of Sir ISAAC NEWTON. This illustrious philosopher, the glory of his country and of his race, was the son of Isaac Newton, proprietor of the manor of Woolsthorp, in the parish of Colsterworth, in Lincolnshire; and he was born at the manor-house in 1642. Recent researches have made it appear probable that the family was originally from Scotland, Sir Isaac's grandfather having been one of the many natives of that country who emigrated to the south with James VI. Newton was an only and a posthumous child, his father having died a few months before his birth, at the age of thirty-six. His mother about four years afterwards married a second husband, a Mr. Barnabas Smith, minister of the neighbouring parish of North Witham; and her son was upon this left at his paternal estate under the charge of her mother. He was first put to a small day-school at Skillington, and then to another at Stoke; from which last he was removed, when he had reached the age of twelve, to the grammar-school of Grantham, the county town. Here he boarded at the house of a Mr. Clark, an apothecary, the various chemical preparations and other curious contents of whose shelves are supposed to have contributed to awaken his taste for physical investigation and experiment. His genius for mechanical invention now began to display itself in the construction of many curious pieces of workmanship, among which were a water-mill, a water-clock, a carriage in which he could wheel himself round his room, and other similar contrivances. He appears also to have already begun the study of geometry, making his way, it is said, through the Elements of Euclid, with so much ease that a rapid perusal of the demonstrations in their order sufficed to make him master of them; he read the work as if it had been a history or a tale. After he had spent a few years at Grantham, however, his mother, who had returned to Woolsthorp, upon the death of her husband, in 1656, took him home, intending to employ him in farming the property, which was a very small one, that he might lead a country life as his father and grandfather had done. But occupations of this kind had no attraction for the young philosopher: when he was sent along with a servant to Grantham to dispose of the produce of the farm, he used to leave the man to go by himself to market, while he either sat down with a book in his hand by the road-side, or repaired to his former lodgings at the apothecary's, and shut himself up beside a parcel of old books in the garret. At length, convinced that he would never make a good farmer, his mother consented to allow him to follow the bent of his inclination. He then returned for

nine months to the grammar-school of Grantham; and on the expiration of that period, in June 1660, proceeded to Trinity College, Cambridge. Here he applied himself to his studies, and especially to mathematical science, with extraordinary ardour; and, although the statement is so wonderful as almost to seem incredible, appears actually to have completed all the splendid discoveries which have immortalized his name, within the first six years of his academic course. In 1664 he purchased a prism, or triangular piece of glass, for the purpose of trying some experiments suggested by a work of Descartes; and the investigations upon which he thus entered led him gradually to his great discovery of the composition of light, and the unequal refrangibility of the different sorts of rays, the doctrine from which nearly the whole of modern optical science is derived. In or before the year 1666 he had invented his new instrument of calculation, the method of fluxions, the grand auxiliary to which physical science in almost every department owes its chief triumphs, and without which it would have been comparatively helpless. And it was also in 1666 that, having retired to Woolsthorp, in order to avoid the plague, which then raged at Cambridge, he was, while sitting in his mother's garden, struck with the first idea of his theory of universal gravitation, by the simple incident of an apple dropping from a tree. He immediately entered into the calculations necessary to verify the hypothesis he had formed, and would have then established its truth if he had possessed accurate measurements of all the distances which he had to take into account; but being misled by certain incorrect statements, which prevented the result of his investigation from turning out what it ought to have done, he desisted in the mean time from the further prosecution of the subject, and it was not till sixteen or seventeen years afterwards that, with rectified data, he resumed it, and soon brought it to a triumphant conclusion. Meanwhile he had taken his degree of B. A. in 1665, had become a junior Fellow of his college in 1667, had graduated M. A. in 1668, and in the same year had obtained a senior Fellowship. In 1669 Dr. Barrow, having accepted the chair of Divinity, resigned the Lucasian Professorship of Mathematics, when Newton was appointed his successor. In January 1672 he was elected a Fellow of the Royal Society, and almost immediately after began to contribute to the Transactions accounts of his discoveries in optics, which fixed upon him the attention of men of science in every part of Europe. These and his other communications also involved him in many vexatious controversies, into the history of which it is impossible for us to enter here, but which appear to have greatly annoyed and distressed his placid and sensitive disposition, and even at times to have made him almost regret that he had not hidden the light that fell upon him within his own bosom. "I blame my own imprudence," he exclaims in one of his letters, "for parting with so real a blessing as my quiet, to run after a shadow." He at last requested Oldenburg, the secretary of the Royal Society, to prevent the appearance, as far as he conveniently could, of any objections or philosophical letters that might be sent respecting his discoveries. He also expressed the utmost aversion to the publication of his Principia, the immortal disclosure of his philosophy of the universe, when the Society first applied to him to allow them to print it. "Philosophy," he says, writing on the subject to Halley, "is such an impertinently litigious lady, that a man had as good be engaged in law-suits as have to do with her." He was, however, eventually prevailed upon to yield; and the work appeared in May 1687. His Optics he would not publish till the year 1704, two years after the death of his pertinacious tormentor Hooke, who, while he lived, had almost regularly either contested the truth of every discovery Newton announced, or claimed it as his own.

In 1688 Newton, who had some time before distinguished himself by his defence of the privileges of the University against certain arbitrary attempts of James II., was returned as one of its representatives to the Convention Parliament. In 1695 he was appointed to the office of Warden, and in 1699 to that of Master of the Mint, a place worth about £1,500 a year. He now relinquished the teaching of his class to Mr. Whiston, to whom he gave all the emoluments; and in 1703 he resigned the chair. In 1701 he was again returned to Parliament for the University of Cambridge. In 1703 he was elected for the first time to the Presidency of the Royal Society; and he was annually re-elected to the same high office while he lived. In 1705 he received the honour of Knighthood. The remainder of his life, except while engaged with the duties of his office, was spent, as the previous portion of it had been, in constant study, almost every department of human knowledge receiving in its turn some new light from his singularly-gifted intellect. Newton died at his home in Orbell's Buildings, now Pitt's Buildings, Kensington, between one and two o'clock in the morning of Monday the 20th of March, 1727, in the eighty-fifth year of his age.

[Portrait of Newton.]

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